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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,742	03/04/2002	Yasushi Sugaya	614.1747CD2C	3699

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EXAMINER	
HUGHES, DEANDRA M	
ART UNIT	**PAPER NUMBER**
3663	

DATE MAILED: 12/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/086,742	SUGAYA ET AL.	
	Examiner	Art Unit	
	Deandra M Hughes	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 8-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 8-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-4 and 8-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni (US 5,406,404 published Apr. 11, 1995) in view of Naito (US 5,568,310 filed May 4, 1995).

With regard to claims 1, 3-4, 8, 10-12, 14-16, 18-19, DiGiovanni discloses a multi-stage optical amplifier (multiple EDFAs #1) for amplifying received WDM signals (fig. 1) with substantially equal gain (fig. 2) with respect to the wavelengths of the plurality of optical signals (1545nm-1565nm) and for outputting the amplified WDM signal. The multistage amplifier includes a first stage (1st instance of #1) and a second stage (2nd instance of #1) with a level controller (the variable attenuator, VA) situated between them for controlling the power level of the WDM signal amplified in the 1st stage.

However, DiGiovanni does not specifically disclose a transmitter and receiver. This is well known in the art. Further, it is taught by Naito (TX and RX). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to use the multistage optical amplifier in a transmission system for the advantage of compensating for power loss during transmission.

With regard to claims 2, 9, 13, 17, DiGiovanni discloses:

- a first optical transmission line (line through which signals #4 travel) through which a WDM optical signal including a plurality of optical signals with different wavelengths are transmitted (fig. 2; 1545nm-1565nm)
- a multi-stage optical amplifier (multiple EDFAs; #1) to amplify the WDM optical signal with substantially equal gain (fig. 2) over the wavelengths of the optical signals; and
- a second optical transmission line (second arrow on the extreme right of fig. 1A) through which the amplified WDM optical signals is transmitted, wherein the multi-stage optical amplifier includes:
  - a front stage optical amplifier (1st instance of #1) which amplifies the WDM optical signal to produce a front-stage amplified WDM optical signal;
  - a level controller (variable optical attenuator, VA) which controls a power level of the front-stage amplified WDM optical signal and outputs a controlled WDM optical signal (the VA is situated between the two stages); and
  - a rear-stage optical amplifier (2nd instance of #1) which amplifies the controlled WDM optical signal to produce a rear-stage amplified WDM optical signal.

However, DiGiovanni does not specifically disclose a transmitter and receiver. This is well known in the art. Further, it is taught by Naito (TX and RX). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to use the

multistage optical amplifier in a transmission system for the advantage of compensating for power loss during transmission.

Response to Arguments

3. Applicant's arguments filed 10/1/04 have been fully considered but they are not persuasive.

Applicant argues the following:

(A) A multistage amplifier is "a device having an input and an output, and a plurality of amplifier stages between the input and the output." (pg. 8, lines 26-27). The amplifier of DiGiovanni is not a 'multistage amplifier' because the amplifiers of "DiGiovanni are positioned at significant distances from each other in a dispersed manner throughout the communication system...no portion of DiGiovanni discloses having an 'input' and an 'output', with multiple stages between the input and the output." (pg. 9, 1st paragraph).

(B) "As DiGiovanni suggests the negative impact on the WDM optical signal after passing through a plurality of optical amplifiers dispersed along a transmission line, DiGiovanni can be seen as 'teaching away' from employing a multistage amplifier to amplify a WDM optical signal with substantially equal gain over the wavelengths of the optical signals as recited, for example, in claim 3". (pg. 10, 5th paragraph).

(C) The variable attenuators of "DiGiovanni are used in a substantially different manner than the level controller recited, for example, in claim 3." (pg. 11, lines 1-2).

With regard to Argument **(A)**, applicant's argument is found not convincing because the input and output of the amplifier is inherent. Otherwise, no signal would enter the amplifier for amplification. Additionally, without an output the amplifier would not emit an amplified signal. Further, the distances at which the amplifiers are positioned are not claimed.

With regard to Argument **(B)**, applicant's argument is found not convincing because DiGiovanni discloses the positive claim limitation of achieving substantially equal gain over the wavelengths, as was addressed in the office action (fig. 2). The issues of SNR degradation and/or the fluctuation of the gain difference passing through each amplifier are not claimed by the applicant.

With regard to Argument **(C)**, applicant's argument is found not convincing because the difference in the use of the variable attenuators is not claimed.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M Hughes whose telephone number is 703-306-4175. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Deandra M Hughes
Examiner
Art Unit 3663

THOMAS H. TARCZA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600